

## REMARKS

Claims 1-21 and 26-35 are pending. Claims 1 and 20 have been amended to recite “wherein said paperboard strip is formed from felting fibres from solution” to highlight the distinction between the claimed invention and the art cited in the Office Action mailed February 20, 2004.

### Rejections Under 35 U.S.C. §102(b)

Claims 1-6, 26-28 and 34 stand rejected as anticipated by GB 2139498 (“Kuan”), U.S. Patent 5,447,713 (“Eisner”), and U.S. Patent 2,224,622 (“Waples”). The Kuan, Eisner and Waples patents do not disclose a combustible **paperboard strip** useful as a substance delivery device for a substance toxic to insects and/or a perfume. The materials used in Kuan, Eisner and Waples are formed by a different process and have different properties from paperboard.

Kuan’s strip is formed of a “filler” made of charcoal as the primary ingredient, wood powder and starch, which are combined to form a paste and deposited onto a paper backing, page 1, lines 38-99. Kuan requires a backing sheet because the filler is frangible and does not have the strength and flexibility of the paperboard of the present invention. The paperboard used in the present invention has very different properties than Kuan’s filler, and is formed by a different process, specifically felting of fibers from a solution as recited. Pages 1 and 2 of the present specification outline how paperboard is very different from materials used by Kuan, and the other cited art, and the use of paperboard in the present invention leads to substantial improvements in performance over prior art substance delivery devices. Hence, Kuan cannot anticipate the present invention as it does not teach or suggest the use of paperboard formed by felting fibres from solution for a combustible insect repellant.

Eisner discloses the use of a woodchip and binder combination or pressed wood fibers, which leads to a fibreboard product that is very different in properties from the paperboard recited in the claims. As can be seen by the attached definition of medium-density fibreboard it is an engineered wood product (definitions from “Wikipedia” found on the internet at <http://www.free-definition.com/Engineered-wood.html>). The attached definition of engineered wood products shows that they are formed of adhesives and wood strands, fibers or veneers. The properties of Eisner’s fibreboard and how it is

produced are thus very different from the paperboard recited in the present claims. The process used to form Eisner's fibreboard cannot produce paperboard.

Waples discloses a mixture of resins with a vegetable fiber, wood pulp or paper. Resin bound delivery devices tend to "dust" when small particles break off during handling. Further, use of wood fibers leads to a less flexible product than paperboard which uses the cellulosic fibers used in making paper. Paperboard is formed by a process that is very distinct from that used in Waples, leading to a product with very different properties. In contrast to Waples' frangible product that can dust, the paperboard of the present invention is formed by felting fibers from solution and drying the resulting interlocked fiber mesh. This results in a flexible material of a uniform consistency, which can be readily distinguished from other products by visual inspection.

In view of the clear distinctions and benefits of paperboard for a combustible insect repellant from the materials disclosed in the prior art, withdrawal of the rejections under 35 U.S.C. §102(b) is warranted and respectfully requested.

### **Rejection Under 35 U.S.C. §103**

Claims 1, 2, 5, 6, 8, 9, 11, 16-21, 26, 27, and 29-34 stand rejected as obvious over Chinese Patent 2,356,495 ("CN 2"), in view of U.S. Patent 3,767,785 ("Bordenca"), Waples, and U.S. Patent 5,505,491 ("Yano").

Neither CN 2 or Yano disclose the use of paperboard. CN 2 teaches paper, not paperboard. The paper coils taught by CN 2 suffer from unpredictable burn rates and poor structural strength. The present inventors found that paperboard, which is a very different material and formed by a different process from that taught by CN 2 and Yano, provides significant improved performance over the different materials used in the prior art. Yano mixes vegetable powder and cotton fibres, and hence does not teach or suggest paperboard.

Bordenca is a patent issued in 1969 that teaches away from the present invention as it teaches adding insect repellant to a packaging material to preserve the packaging, whereas the present invention is directed to forming a product that will be consumed by burning at a controlled rate and that contains sufficient amount of a

substance toxic to insects that it will provide a controlled release thereof when burned to repel insects. The Bordenca patent was issued for approximately thirty years before the present invention, yet no combustible substance delivery devices were formed of paperboard during all this time despite the surprising benefits discovered by the present inventors by using same. There is nothing in Bordenca or the prior art that would lead one of skill in the art to modify Bordenca so that Bordenca's packaging could be deliberately burned, the opposite of Bordenca's stated goal of preserving Bordenca's packaging, with any reasonable expectation that it would be suitable as a practical insect repellant. In view of the long felt but unsolved need for an improved insect repellant strip, it is respectfully submitted that the present invention is not obvious over Bordenca, alone or in combination with the prior art.

As noted above, Waples does not use paperboard nor does it suggest an alternative to its resin bound products, and therefore it cannot teach or make obvious the present invention.

The present invention provides non-obvious solutions to problems that have confronted the insect repellant industry for many years, specifically insect repellant coil breakage due to overly brittle compositions and unpredictable or undesirable burn rates. It is respectfully noted that an estimated 100 million mosquito coils are sold worldwide each year, predominantly in third world countries with poor distribution networks. This makes product performance critical for remotely-manufactured products as returns are difficult or impossible. Further, use of these products is critical to reducing insect-borne diseases in many impoverished areas, where cost of manufacture and delivery must be minimized. A plethora of local manufacturing facilities leads to increased costs due to loss of economies of scale.

The majority of coils sold are woodchip/resin compositions impregnated with insecticide. These are brittle, and approximately one third arrive at retail outlets damaged in some form. These prior art coils also produce a powder or "dust" resulting from their frangible and inflexible nature, which can be hazardous to workers involved in their manufacture and distribution. Further, in order to obtain long burn times, prior art coils had to be very thick, increasing the bulk and weight thereof, and consequently leading to higher shipping and storage costs. Paper coils, readily distinguished from the

paperboard products of the present inventions, suffer from fast and unpredictable burn rates.

The present inventions surprisingly accomplish stable and predicable burn rates with a material that is less dense and far more flexible than prior woodchip and/or resin bound products. As a result, far less product is damaged in transit, and the lighter weight leads to substantial savings in shipments. Further, since the present invention can be produced at a remote central location where manufacturing costs can be minimized, economies of scale are introduced to a highly competitive market.

Insect repellent coils and paperboard have been known for many years. Despite the many advantages from making a paperboard substance delivery device in accordance with the present inventions, the prior art is devoid of any teaching or suggestion of same. In view of the forgoing it is clear that the present inventions are not obvious, and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

If there are any issues that the Examiner would like to discuss prior to issuing a Notice of Allowance, please telephone the undersigned at 408-294-6750 to expedite allowance.

Respectfully submitted,

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Date

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